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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers	)	**CC Docket No. 01-339, No. 96-98 & No. 98-147**

REPLY DECLARATION OF C. MICHAEL PFAU ON BEHALF OF AT&T CORP.

I. BACKGROUND

1. My name is C. Michael Pfau. My business address is 295 North Maple Avenue, Basking Ridge, New Jersey 07920. I have a Bachelors of Science degree in Mechanical Engineering and a Master of Business Administration. I have a Professional Engineering license from the state of Pennsylvania.

2. I am employed by AT&T Corp. ("AT&T"), and I serve as Division Manager in the Law and Public Policy Division. My responsibilities include developing public policy as it relates to interconnection with incumbent local exchange carriers ("ILECs") and the use of unbundled network elements that they are obligated to provide under the Telecommunications Act of 1996 ("the Act") and the Commission's rules implementing the Act. In that capacity I am required to understand the operational needs of the various business units so that their interests are reflected in the policy positions taken by AT&T. I also help those units understand how provisions of the Act and the Commission's rules affect their business plans. Since 1997, I have participated in developing the written comments that AT&T has filed in most of the Commission

dockets addressing unbundled network elements. I have also supported AT&T's positions in *ex parte* meetings and through direct testimony in various state proceedings.

II. SUMMARY AND INTRODUCTION

3. The purpose of my declaration is to address the claims in the "UNE Fact Report 2002" submitted jointly by BellSouth, SBC, Qwest, and Verizon (the "ILEC Report"). I address ILEC claims made that various "marketplace facts" demonstrate that CLECs have deployed facilities to such a significant extent that there is no need for the Commission to require the ILECs to unbundle their own facilities. There is no basis for these claims. In particular, in Part III, I explain that the ILECs' data on CLEC switch deployment is in fact highly consistent with the claims of AT&T and other CLECs that it is not practical or economic to deploy switches to serve low-volume customer locations, and that CLEC switch deployment is not deterred by the availability of unbundled elements or UNE-P. Part IV refutes the ILECs' methodologies used to assert that CLECs serve between 16 and 23 million lines using CLEC switches, and explains why those figures are far less reliable than the data that the Commission itself collects to measure local competition. In Part V, I refute the ILECs' related claims that data on number portability and NNX codes opened by CLECs show widespread competition.

4. In Part VI, I refute the ILECs' claim that there is a vibrant wholesale market for interoffice transport. In particular, I show that the ILECs have greatly overstated the extent to which the companies they list as alternative transport providers actually provide capacity to other carriers. I also show that "collocation hotels" principally serve ISPs and other suppliers of data services, not CLECs such as AT&T that also offer voice services.

III. SWITCH DEPLOYMENT

5. In the ILEC Report, the ILECs repeatedly tout their claim that "CLECs operate approximately 1,300 *known* local switches" (ILEC Report at II-1) as a basis for removing local

switching from the list of unbundled network elements ("UNEs") that ILECs must make available to CLECs. According to the ILECs, CLECs cannot be impaired in any manner in using their own switches if they continue to deploy them. SBC at 69-70.

6. However, even assuming that the ILEC Report switch count is entirely accurate (which it is not), a mere count of switches that competing carriers have deployed is a poor method of determining whether CLECs are impaired when ILECs are not required to unbundle local switching. That is because the deployment of switches, while costly and time-consuming, is not the most critical impairment faced by CLECs in attempting to use their switches.[1] Rather, CLECs' impairment principally arises because of the significant practical and economic barriers to *using* switches to serve customers *after* they are deployed.

7. In particular, as AT&T has explained, these practical and economic barriers are currently almost insurmountable with respect to so-called "mass-market" and other small locations of customers – *i.e.*, customer locations served by a carrier providing service over voice grade loops. *See* AT&T at 211-17 & Brenner Dec. ¶¶ 20-23, 30-42. For these customer locations, there are at least three specific economic and practical barriers that preclude CLECs from offering service using their own switches: (1) the hot cut method of migrating voice grade loops to CLEC switches is unworkable and inherently incompatible with mass-market competition; (2) it is extremely expensive (and inefficient compared to the ILEC) to extend voice

[1] There are, of course, instances where the time and costs to deploy a switch does create a significant impairment. For example, in so-called "greenfield" build situations (where new development is occurring and new facilities must be deployed), the ILECs have asserted that CLECs are able to compete on equal terms with the ILEC. However, in those cases, a CLEC-deployed switch may not be economic, because the new development may not generate sufficient traffic to independently justify the cost of deploying a switch. In addition, many subdivision developers are unlikely to take the chance that a CLEC switch can be deployed and connected to the loops in the time that switch deployment necessitates, particularly when there is an established alternative (the ILEC) that can provide service almost instantly.

grade loops to remotely deployed switches; and (3) the increasing deployment of loops equipped with digital loop carrier ("DLC") systems makes it practically impossible for CLECs to access such loops and connect them to their switches. As a result of these impairments, CLECs cannot practically and economically serve mass market customers and low demand locations using CLEC switching, even in areas where CLECs have already deployed their switches. Accordingly, the data that the ILEC have provided showing merely that some CLECs have deployed switches in some localities with the aspiration of serving particular customers, even if accurate (which they are not), is insufficient to prove that CLECs are not impaired in using those switches. Thus, the continued unbundling of local switching for customers served by voice grade loops is fully justified.

8. AT&T's own business plans demonstrate this point precisely. As AT&T made clear in its opening comments, AT&T has deployed over one hundred local "Class 5" switches, and continues to deploy such switches today. However, AT&T has made very clear that it has been unsuccessful in using those switches to serve customer locations served via a voice grade loop. *See* Brenner Dec. ¶¶ 30-42. Although it attempted such a strategy for certain business customers beginning in 1999, AT&T halted that market entry strategy of connecting its switches to voice-grade loops. *Id.* ¶¶ 38-42. Rather, AT&T uses those switches almost exclusively to serve customer locations that employ high capacity loops. *Id.* ¶¶ 24-29. As AT&T's market experience shows, therefore, even though a CLEC deploys a switch, it is nonetheless impaired in using that switch to serve small locations of customers.

9. For these reasons, the ILECs' claims that CLECs have deployed over 1300 switches is not responsive to the impairment analysis that AT&T and other CLECs have explained and fully documented, using the actual marketplace experience that constitutes the

most valuable evidence of impairment. Nevertheless, a close analysis of the switch count data submitted by the ILECs actually supports a number of the aspects of that CLEC impairment analysis.

10. *First*, the data show a substantial number of the switches deployed by CLECs that also seek to use UNE-P. This fact fully supports the view that availability of UNE-P supports deployment of facilities, and does not deter it, as the ILECs claim. In fact, given the grim realities of the current hot cut process and the issues raised by the proliferation of DLC in the loop plant and the cost of backhauling voice grade loops, UNE-P is virtually the only means available to promptly change a customer from ILEC service to CLEC service.

11. *Second*, detailed examination of the ILEC data relating to switch deployment also supports the view that it is not economic or practical to deploy switches to serve low demand customer locations. For one thing, it is evident that many CLEC-deployed switches are being operated exclusively to serve business customers, particularly business customers with intense demand for telecommunications services and that do not rely on voice grade loops. In addition, over 250 switches (nearly 20 percent of the total) included by the ILECs' count were deployed by entities that are now bankrupt or have only recently emerged from that process. If CLECs could practically and economically deploy *and use* their own switches to serve low demand locations, then it is reasonable to expect that CLECs pursuing a pure facilities-based strategy would be less likely to be in bankruptcy. In fact, the opposite is true: all 254 switches that are now owned by bankrupted entities were deployed by "pure" facilities-based CLECs.[2]

[2] Of the thirteen companies that I identified as currently bankrupt or recently emerged from bankruptcy, only McLeod seems to have any substantial commitment to UNE-P – primarily as an acquisition vehicle. At the same time, McLeod is one of the few companies that has recently emerged from bankruptcy protection. Therefore, it too points to the fact that UNE-P is essential to viability of CLEC that are substantially facility based.

12. At the end of the day, the ILECs' switch count does not come close to showing extensive switch deployment that allows CLECs to serve low volume customers.

A. A Significant Number Of Switches Identified By The ILECs Have Been Deployed By Competing Carriers That Also Use a UNE-P Entry Strategy

13. Of the 1324 switches counted by the ILECs, a substantial portion are deployed by carriers, like AT&T, that also seek to provide services using unbundled switching and UNE-P. In particular, AT&T has deployed 116 local switches (plus 12 switches formerly owned by Media One which are being integrated into the AT&T local network) and by year-end 2001 had modified 142 additional 4E switches to provide a limited form of local services to certain business customers.[3] However, for reasons I cannot identify, of the 1324 switches identified by the ILECs, the ILEC Report asserts that 247 are owned by AT&T.[4]

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[3] **[begin proprietary]** ********** **[end proprietary]**

[4] The ILEC switch count is simply incorrect when it comes to identifying AT&T's switches It shows that AT&T has 150 local class 5 switches (rather than 128) and 97 class 4 switches (rather than 142) – for a total of 247 switches (as compared to 270). *See* ILEC Report, App.B. The ILECs' incorrect manner of counting AT&T's switches calls into question the validity of the ILECs' overall switch count. Although the numbers for AT&T in the ILEC count understate the actual number of switches deployed, the basis for the error is unclear. Because the source(s) of the ILECs' data and their errors are not clear, this is another reason why the ILEC count is in correct, in addition to the reasons discussed below. It is difficult to determine the complete effect such errors have on the overall total – although it appears in many respects to be significantly overstated. For example, the ILEC Report states that ITC^Deltacom has deployed a total of 42 switches as of year-end 2001. *See* ILEC Report, at App. B. However, NPRG (one of the ILECs' sources throughout its report) notes that for 2001 ITC has deployed only 13 switches and has 0 planned. *See* NPRG "CLEC Report 2002, 15th edition" at Table 16. ITC's own public filings with the Securities and Exchange Commission ("SEC") indicate that it had 12 voice switches deployed as of September 2001. (*See* ITC's November 14, 2001 10Q filing with the SEC available at http://www.sec.gov/Archives/edgar/data/1041954/000092838501502483/d10q.txt). The ILEC Report has therefore more than tripled the amount of switches actually deployed by ITC (e.g., 42 versus 12) – a gross exaggeration in itself. A non-exhaustive review of the ILEC Report's listing of CLEC switches in Appendix B reveals that similar overstatements have occurred in the counts of other CLECs including Teligent,

14. According to the ILEC Report, together WorldCom (including Intermedia) and AT&T have deployed about 393 switches – nearly 30 percent of all switches and about 35 percent of switches deployed by non-bankrupt entities. In addition, numerous other CLECs have also indicated that, even though they have deployed switches, they employ UNE-P as a critical mechanism for acquiring and serving low volume customer locations, including small locations of big business customers. Carriers listed as part of the UNE-P Coalition have deployed an additional 56 switches reflected in the ILEC switch count.[5] Other carriers that have deployed their own switches and also seek access to UNE-P carriers include BTI (14), ELEC (1), Sprint (3) Lightship (4) and, Logix Communications (6), for an additional 28 switches. All told, these 14 "UNE-P" carriers account for a total of 477 switches in the ILEC Report list: about 36% of the total switches identified by the ILECs and about 42% of the ILEC-identified switches that were not deployed by companies that are now bankrupt.

15. The ILECs' own switch count data, therefore, show that carriers that are using UNE-P have also deployed a significant number of switches. This fact alone strongly supports the claims made by AT&T and other CLECs that UNE-P spurs investment in switches and other facilities. Indeed, even though the Commission and the courts have affirmed that carriers may provide competing service without owning their own facilities, many of the competing carriers that support UNE-P in this proceeding also have deployed switches. If the ILECs were correct that carriers seek to use UNE-P solely to avoid investment in facilities, then presumably fewer CLECs supporting UNE-P would own and deploy switches.

Global Crossing, and Mpower. In fact, in two of these instances the ILEC report more than double the number of switches these CLECs have deployed according to other public sources such as NPRG.

[5] The carriers are: Birch Telecom (3); Broadview (4), Corecomm (2), IDS Telecom (1), Ionex Telecommunications (3), ITC DeltaCom (42), and Metropolitan Telecommunication (1).

16. Thus, a simplistic focus merely on the fact that CLECs have deployed some number of switches obscures an important point: *i.e.*, a substantial number of those switches were deployed by carriers that are using UNE-P to provide competitive services and to accumulate a base of customers necessary to make transfers to the facilities of the CLEC more practical to undertake where other conditions (e.g., performance quality of the project-managed transfer, non-recurring charges for the change, and etc.) permit. If, as the ILECs claim, availability of UNE-P deters investment in facilities, then surely UNE-P carriers would be deploying far fewer switches than what the ILECs' own count shows.

B. The ILEC Switch Count Data Also Supports The Claim That Switches Cannot Be Practically or Economically Used To Serve Low Demand Locations.

17. The ILEC switch data also support another critical portion of the impairment analysis described by AT&T and other CLECs: that the switches that have been deployed cannot be used practically or economically to serve customer locations with voice grade loops. This claim is supported by two aspects of the data.

18. First, the ILEC data reveal that over 254 of the 1324 CLEC switches were deployed by entities that have recently sought bankruptcy protection. The ILECs themselves admit that some 17% of their switch count total is owned by bankrupt entities. ILEC Report at B-1. Moreover, as the Commission is aware, other companies – most notably XO Communications, which has deployed 39 switches according to the ILECs' data– have filed for bankruptcy since the initial comments were filed. Accordingly, by AT&T's count, the number of switches listed in the ILEC Report that have been deployed by companies that have recently been in bankruptcy is at least 254 – or about 19 percent. In itself that figure is significant and indicates the severe risks entailed in using a switch once it is deployed.

19. An even more revealing figure to be drawn from the ILECs' switch count data relates to the entry strategy of the competing carriers that have deployed switches and then gone into bankruptcy. If, as the ILECs claim, CLECs can easily connect their deployed switches to all types of customers over a broad geographic area, then one would expect that relatively few of the 254 "bankrupt" switches would have been deployed by "pure" facilities-based CLECs that pursued the strategy the ILECs claim is easy to implement. In fact, precisely the opposite is true: *all* of these switches were deployed by carriers that AT&T has identified as pure facilities-based carriers that did not also pursue a broad UNE-P-based entry strategy.[6] By contrast, *no* carrier that has sought to serve customers via UNE-P and has also deployed a switch has filed for bankruptcy. This clearly supports AT&T's claims that a pure facilities-based strategy are severely impaired in using their own switches to serve small locations – those necessary to build scale –and that UNE-P presents the only currently viable method of serving such customers because of the pervasive DLC loop architecture, the cost of backhauling voice grade loops and the impediments present in the current hot cut process. And because UNE-P provides a means to quickly change the customer from one service provider to another, a CLEC can generate an immediate revenue stream before it (and its customers) must endure the time-consuming, expensive and volume-constrained hot cut process.

20. *Second*, the ILEC data also reveal that the remaining entities (*i.e.*, those that have deployed switches but have not filed for bankruptcy) are not using those switches to serve small customer locations – those requiring only a few voice grade loops. Instead, these carriers are

[6] The companies are: Adelphia, Columbia Telecomm, e.spire, FirstWorld Communications, Global Crossing, ICG Communications, McLeod USA (now emerging), MPower, Net-Tel Corp., Optel, Picus Communications, Teligent, Winstar and XO Communications. Fairpoint, Net2000 and Network Plus, although in bankruptcy and included in the ILEC list, were not treated as bankrupt entities because their assets were subsumed, at least in part, by other companies also listed on the ILEC's switch list.

using their switches to serve customer locations with intense demand for telecommunications. In fact, only the cable companies, who can leverage the facility into the customer's premises – a facility that was justified by video revenues and that does not require a hot cut to begin phone service – are currently providing switch-based service to any significant extent to the consumer market.

21. Indeed, the facilities-based CLECs that have deployed more than a handful of switches have publicly stated that they serve large business customers, not mass-market customers. Apart from AT&T, WorldCom, and other UNE-P carriers, and the bankrupt carriers, the CLECs with the most switches deployed are Time Warner Telecommunications (38), Level 3 (36), KMC Telecom (33), Choice One (29), Allegiance (26), Alltel (19), Focal (19), and US LEC (18).[7] All of these carriers cater primarily or exclusively to very large business customers that can be served with high capacity loops. For example,

- Time Warner Telecom's web site proclaims that it is a "leader in providing local and regional optical networks and broadband services *to business customers*" http://www.twtelecom.com/Default.aspx?pageId=30;
- Level 3's web site states that it "provides . . . services that *communications-intensive* customers demand." http://www.level3.com/576.html;
- KMC Telecom states on its web site that its "business has two distinct components: serving *communications-intensive* customers" and providing data services. http://www.kmctelecom.com/company/index.cfm;
- An independent analyst recently stated that Allegiance "is clearly focused on businesses that can be served by a full or fractional T1, given that its most popular product is its integrated voice and data IAD service." K. Gerwig, Company Assessment, Jan. 10, 2002 www.currentanalysis.com; and

[7] No other carrier has deployed more than 15 switches according to the ILEC count.

- Focal Communications has filed with the Commission a statement that it uses its own switches to provide service, but "concentrates exclusively on customers that have a current need for DS1 communications functionality or higher." Letter from Richard Metzger and Patrick Donovan, Focal Communications, to Magalie Roman Salas, FCC, CC Docket No. 96-98, at 2 (May 19, 2000).

- In its SEC filings, US LEC Corp. reported that it "provid[es] voice, data and Internet services to over 6,800 mid-to-large-sized business customers" US LEC Corp., Form 10-K, p. 3, filed 3/29/02).

- In its SEC filings, Choice One states that "one of the first integrated communications providers in each of our markets to provide dedicated, high-speed digital communications services using DSL technology. . . . We have installed DSL equipment in substantially all of our existing collocations." Choice One, Form 10-K, page 2, filed 4/1/02.

- And in its SEC filings, Alltel stated that "[i]n evaluating its existing CLEC operations, the Company determined that a business model that relied on interconnection with other carriers had limited potential for profitably acquiring market share. Accordingly, on January 24, 2002, the Company announced its plans to exit its CLEC operations in seven states representing less than 20 percent of ALLTEL's CLEC access lines." Alltel, Form 10-Q, p.19, filed 5/14/02.

22. Thus, virtually none of the carriers in the ILEC switch count are apparently using those switches to serve customers via voice-grade loops to any significant extent. The data therefore fully support the impairment analysis set forth by AT&T and other CLECs.[8]

IV. THE ILECS' COUNT OF LINES SERVED BY CLECS OVER THEIR OWN SWITCHES DOES NOT REFUTE THE CLECS' IMPAIRMENT ANALYSIS.

23. In a claim related to the ILEC switch count data, the ILECs also assert that CLECs cannot be impaired because they serve between 16 and 23 million lines with their own

[8] In fact, despite the fact that AT&T has sought to employ voice grade unbundled loops with its own switches and had, by the end of 2001, connected about **[begin proprietary]** ********** ********** **[end proprietary]** The vast majority **[begin proprietary]** ****** **[end proprietary]** of such connectivity (on a VGE basis) for AT&T is obtained at levels exceeding a voice-grade loop interface with the greatest single proportion of the connectivity **[begin proprietary]** ********** **[end proprietary]** obtained as special access. This confirms from AT&T's experience that few of the customer connections to its own local switches are provided using voice grade loops.

switches, generally using self-provided loops. SBC at 69; Verizon at 96. According to the ILECs' "estimates," these figures "highly conservative." Qwest at 22 & n.41; *see* SBC at 69-70 & n.91. These numbers are simply not credible and are flatly inconsistent with data collected by the Commission for the express purpose of determining the extent of local competition. But more fundamentally, the ILEC line count suffers from the same fundamental flaw as the ILEC switch count: the ILECs' estimates of lines served by CLEC switches do not contradict the *specific* showings of impairment set forth by the CLECs and recognized by State commissions. In particular, CLECs are *not* serving small customer locations with their own switches, and the ILEC estimates do not demonstrate otherwise.

24. Perhaps the most superficial of the analyses presented by the ILEC Report is the analysis relating to the self-provisioned loop counts based upon the count of interconnection trunks. The overly simplistic method proceeds as follows: (1) count the interconnection trunks provisioned, (2) multiply the result by a trunk-to-line conversion factor self-proclaimed to be conservative, and (3) subtract 1.5M VGEs provided to CLECs as UNE-L. The 23M self-provisioned CLEC lines, therefore, is calculated as follow: 23M = (9M trunks)*(2.75 lines/trunk) – (1.5M UNE-L). Each of these steps suffers from flaws that individually cause over-estimation and, because of the interactive nature of the calculation, compound to produce totally unrealistic results.

25. As a first consideration, the simple count of interconnection trunks seems to assume 100% trunk utilization. In reality, due to provisioning lags and forecasting error, it is more likely that the actual utilizations are well below 100%. Furthermore, the trunk-to-line conversion factor is basically unsubstantiated.[9] However, even if one were to grant the analysis

[9] That is, in ILEC Report, Attachment B, Exhibit 5, footnote 3, there is a list of various factors that could represent CLEC line to trunk ratios. Based on these references, the ILEC Report

the benefit of the doubt and presume that the 2.75 factor employed also included an adjustment for trunk utilization, there remain a number of egregious errors in the ILEC analysis.

26. The most fundamental error in the ILEC Report occurs when only UNE-L loops are subtracted from the estimate of total CLEC lines served. Even then, the ILEC Report excludes only half the total UNE-L loops (for some reason, a business/residence split seems to have been applied, even though interconnection trunks are not distinguished on that basis). This error internalizes the fundamentally self-serving, unstated, and entirely erroneous assumption that only two possible connections between a customer and the CLEC network occurs either via UNE-L or via CLEC self-provisioned loops. In fact, it is well-documented that special access is employed to a great extent as well. At least in AT&T's case, the capacity of loops purchased as special access dwarfs the capacity of loops purchased as UNE-L.[10]

27. Indeed, if one accepts that the ILEC Report methodology correctly accounts for trunk utilization and line-to-trunk ratios (which, for the reasons stated above, is highly questionable), then the starting point of the ILEC Report analysis would be 24.75M CLEC lines (9M*2.75). In theory, this number should equal the total of all cable telephone lines, all UNE-L lines obtained without switching, all CLEC lines provided as special access, and all self-provided CLEC loops (all expressed as VGEs). Only the special access number is not directly reported to the Commission in its Local Competition Report -- a fact that, for some reason, the anonymous author of the ILEC Report chose to ignore. The information from the June 2001 Local

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claims that a 2.75 factor is conservative. However, none of these figures cited in the Report, although critical to the calculation, are supported by or attested to by a declaration.

[10] **[begin proprietary]** ********** ********** ********** ********** ********** ********** **[end proprietary]**

Competition Report shows that Cable and Fixed Wireless access lines (self-provisioned) accounted for 1.9M VGEs, UNE-L without switching accounted for another 3.2M VGEs and CLEC owned lines (net of cable and fixed wireless) accounted for 3.9M VGEs (5.776M total less 1.900M cable & fixed wireless). In total, this amounts to 8.9M VGEs, leaving 15.85M VGEs (24.75M less 8.9M VGE) accounted for through special access-based connectivity. This rough calculation indicates that for every one VGE of loop connectivity obtained as UNE-L, 5 to 6 VGEs are obtained as special access. As discussed in footnote 8, AT&T's experience is that a much greater proportion is bought as special access.[11]

28. The second method the so-called ILEC "Fact" Report employs for quantifying CLEC self-provided loops is equally flawed. This method asserts that counting business 911 listings and then subtracting the number of business UNE loops will yield a count of self-provisioned CLEC loops (on a VGE basis). This methodology again repeats the fundamental error of completely ignoring the substantial amount of loop connectivity purchased by CLECs as special access.[12] As discussed in the reply declaration of Morgenstern and Lancaster, 911 database listings do not provide a conservative estimate of self-provisioned physical lines (i.e., due to multiple listings for DID trunks, impacts of area code splits, and retention of inactive numbers and numbers employed by now bankrupt CLECs). Nevertheless, the ILEC Report

[11] A higher proportion should be expected because the computation in the prior footnote does not account for utilization differences between the UNE-L (which is bought primarily as a DS0 so there would be a 1:1 correspondence between the VGEs and the facility employed) and high capacity loops (where the facility may be bought as, for example, a DS1 with 24 VGE capacity but sold (and reported) as a DS0 service where less than all the individual DS0 are sold immediately or used for some switched and private line local services).

[12] For example, AT&T's Digital Link ("ADL") local product is provided virtually without exception over high capacity loops purchased as special access. In addition, contrary to the assertion of the ILEC Report, there are multiple 911 entries per special access connection (see Morgenstern/Lancaster). Thus, the practical result of this situation is that all AT&T Digital Link 911 listings are counted by the ILEC Report 911 methodology as self-provided loops.

asserts that there are 13M 911 business listings (Table 2, p. II-4). Using figures discussed in the prior paragraph, this 13M figure should reflect 3M UNE-L loops and listings associated with almost 20M VGEs of self-provisioned and special access-based connectivity (3.9M self-provision + 15.9M special access based). This implies, assuming the VGE listings all represent unique and active numbers (which they do not), that for every 2 VGEs of connectivity (other than voice-grade UNE loops) there is one 911 listing.[13] This ratio is reasonable given AT&T's experience.[14] Thus, there is no evidence either based upon the "interconnection trunk" or the "911" method that extensive numbers of lines are being served over CLECs' own switches and self-deployed loops.

29. Finally, the primary ILEC evidence that even arguably addresses the CLECs' ability to use their own switches to serve low demand locations is their estimate that CLECs serve 3 million residential lines with their own switches. This claim does not withstand examination. Even at face value, however, this merely shows that all competitors, *including* cable providers, have managed to provide switch-based service to less than 3% of residential access lines in the country.[15]

30. Moreover, it seems very likely that most, and perhaps all, of the residential customers receiving switch-based local service identified in the ILEC Report are cable telephony

[13] The calculation is: (20M self-provisioned and Special Access "loop" VGE)/(13M business 911 listings – 3M UNE-L VGE)

[14] Internal information indicates that for ADL, where there are 24 VGEs per access lines, there are **[begin proprietary]** ********** ********** ********** **[End proprietary]**

[15] The Commission's "Trends in Telephone Service", May 2002, page 8-6 – Table 8.4 shows 126.7M residential access lines in service in 2000, a number that has been growing each year since first being reported in 1988.

subscribers. The Commission's local competition figures for mid-year 2001 show that aggregate cable telephony lines is about 1.9 million. AT&T's submission used in compiling that figure accounted for **[begin proprietary]** ********** ********** ********** ********** ********** ********** ********** ********** ********** ********** **[end proprietary]** Therefore, it is reasonable to expect that the actual industry lines served for year end 2001 should be in the range of 2.2 M.

31. Furthermore, for reasons discussed in the Morgenstern/Lancaster reply declaration, 911 listings do not precisely match cable subscriber counts. **[begin proprietary]** ********** ********** **[end proprietary]**[16] Thus, 2.5M cable telephone subscribers would likely generate about 2.35M 911 records (assuming that AT&T's experience is representative of the industry). This figure likely accounts for the almost all of the ILEC Report's "approximately" 3M facility based residential subscribers. Notably, no non-cable CLEC commenter claims that it provides significant amounts of residential switch-based service. And if any CLECs do provide such service it is most likely to Multiple Dwelling Units

[16] This analysis corroborates, at least for residential listings, that 911 records exceed the number of "loops" as discussed in the Morgenstern/Lancaster Reply Declaration.

("MDUs") which are typically serviced via high capacity facilities that avoid the impairments associated with serving low-volume locations using self-deployed switching.

32. The only other evidence on this issue in the ILEC Report is a two-page chart of various press statements issued by CLECs – some nearly three years old – that indicates that some CLECs (many of them cable companies or ILECs that are acting as "edge-out" CLECs) had plans to serve residential customers using their own facilities. ILEC Report *at* II-12 to II-13 & M-9. This information is no longer credible (if it ever was), and certainly is insufficient to refute the figures contained in the FCC's Local Competition Report. For these reasons the ILECs provide no credible evidence that non-cable CLECs are providing switch-based local service to a significant number of mass-market customers or to customer locations requiring voice grade loops.

V. THE ILECS' DATA ON NUMBER PORTABILITY AND NNX CODES OPENED ALSO DO NOT REFUTE THE CLECS' IMPAIRMENT ANALYSIS

33. The ILECs also point to data on the amount of telephone numbers ported by the CLECs and by the number of NXX codes. *See* ILEC Report *at* II-5 to II-7 & Tables 4-6. As with the other ILEC data, these data say nothing about the types of customers that CLECs are serving. Accordingly, they do not refute the specific showing that AT&T and other CLECs have made that they cannot use switches to provide service to low demand customer locations served by voice grade loops.

34. In all events, the ILECs data, even if taken at face value, hardly demonstrates the robustly competitive markets that the ILECs assert.[17] For example, according to the data in the

[17] Given the aggregate nature by which the ILEC Report discloses CLEC number portability and NPA-NXX statistics and without knowing the methodology employed by the ILECs in analyzing such data, it is difficult to determine its veracity here. However, there are several factors that must be taken into consideration when analyzing such statistics in order to ensure the credibility of conclusions drawn from it – and it is clear the ILEC Report fails to explain whether these

ILECs' Table 4, 47% of wire centers have had telephone numbers ported to 1 or more CLEC switches, 34% to 2 or more, 28% to 3 or more, and 24% to 4 or more. ILEC Report *at* II-6, Table 4. Apart from the significant defect that the table does not provide any information on the type or number of customers whose numbers were ported, the data is ultimately unimpressive : merely a change in phrasing shows that 53% of wire centers have *no* alternative provider and another 13% have merely 1 alternative provider – meaning two-thirds of wire centers face limited competition, and over half face none.

VI. WHOLESALE LOCAL FIBER

The ILEC Report makes extravagant claims regarding the purported availability of wholesale local fiber. The Report asserts (at III-8 – III-9) that there "has been a dramatic increase in fiber supplied by alternative wholesale suppliers, which typically sell or lease dark fiber to other carriers, but do not themselves engage in the provision of telecommunications services." The ILECs' support for these claims consists of quotes from analysts that the shortage of fiber is ending and consultant projections (McKinsey) that wholesale fiber sales will increase in the future. The Report also relies on quotes from Sigma Management to support claims that alternative fiber extension is not difficult and quotes from Allegiance, Sprint and CTC that they are either employing alternative fiber or are deploying fiber themselves. The ILEC Report also includes three tables, which purport to catalogue CLECs, public utilities, and IXCs that are

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important considerations have in fact been taken into account. For example, intra-CLEC and inter-CLEC number porting can serve to inflate CLEC number porting activity. With respect to CLEC-opened NPA-NXXs several considerations are critical in ensuring that an accurate depiction of CLEC activity is represented by an analysis that relies upon such data. These include factoring in appropriate utilization rates towards the number of opened NPA-NXXs; accounting for numbers opened and employed for administrative or non-subscriber related purposes; and, accounting for area-code splits and permissive dialing periods – which, if ignored, can result in double counting of NPA-NXXs. A failure to consider and account for such factors can easily inflate the apparent level of CLEC activity in the local market and lead to erroneous conclusions.

substantial providers of wholesale metropolitan fiber today. *See* ILEC Report, Tables III-5, III-6, and III-7.

35. These claims do not withstand examination. Indeed, as discussed in more detail below, the ILECs' claims suffer from four fatal flaws: (1) there are serious questions about the viability of providing dark fiber on a wholesale basis at all; (2) the ILEC Report radically overstates the viability and the extent of the operations of the dark fiber providers it identifies; (3) the ILEC Report similarly overstates the extent to which public utilities are viable suppliers of capacity; and (4) the ILEC Report overstates the extent to which the IXCs it identifies are viable suppliers of capacity.

A. There Are Substantial Questions About Whether The Provision of Local Dark Fiber Is Viable At All.

36. The proposition that the wholesale local dark fiber market is a viable market is highly questionable. Indeed, the economics of using dark fiber have not been proven and independent consultants have expressed their doubts about its viability.[18]

37. There is an equally compelling, real-world indication that alternative supply of dark fiber is "a failed business case": the increasing financial trouble of the fiber suppliers themselves.

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[18] As Frost & Sullivan has noted, "current market conditions have resulted in decreased spending on dark fiber services for many reasons, a few of which are listed below:

- Costs of lighting dark fiber -- when adding the costs of optronics and switching equipment to the dark fiber, the dark fiber may only contribute five to fifteen percent of the overall cost of lighting the network.
- Cost of labor – additional costs are incurred by growing and maintaining a staff of specialized engineering and support personnel
- Indefeasible Rights of Use (IRUs) – carriers have become increasingly skeptical of purchasing (up to) twenty year IRUs that limit operational flexibility to enter and exit particular markets."

See U.S. Wholesale Wavelength Services 6337-64, Frost & Sullivan 2001, p.7.

38. Alternative local dark fiber supply has two critical characteristics: (1) the connectivity at issue provides the connection directly to a customer or to the lowest level of hierarchical switching (meaning if there is a failure, fast access and restoration is critical), and (2) dark fiber connectivity contracts are generally for a 20-year period. As a result, the buying carrier must have confidence that the supplying carrier will be sufficiently stable to engage in long-term relationships and that the risk is negligible that the buying carrier will be impeded in its ability to access or repair the electronics it must attach to the supplier's "dark fiber" in order to activate it. If the supplier is in bankruptcy, or near bankruptcy, then buying carriers clearly will not have the necessary confidence to commit to a 20-year contract nor would they likely have ready access to their own equipment connecting to the facilities and might not even have access to facilities in which they have made a substantial investment. *See* Giovannucci/Fea Reply Dec.

39. Ironically, the ILECs themselves have argued that providing and using dark fiber is infeasible, despite the fact unused fiber might exist. To the extent these are legitimate issues with respect to accessing unused fiber of the incumbent, they likewise represent impediments to any carrier accessing the fiber of another unaffiliated carrier. For example, Verizon's witness in the recent Virginia interconnection arbitration proceeding at the FCC made the following observations:

- One doesn't plan and build fiber with the idea of going back and re-opening splices and touching them. To the contrary, one builds with the intent that you won't ever have to go back." [Gansert, page 374, lines 1-8]

- "In fact, if additional work is to be done, its splicing is pre-positioned so that additional work can be done to add on whatever parts of the network need to be added later. That would be part of the construction. You don't just put fiber out there and say maybe we will go back some day and hook a couple of pieces together." [Gansert, page 374, lines 9-15]

- "Typically, you have two cases where fiber might be left unused. One is where it's a stage project. For example, you are putting in a large, say, feeder type cable, and perhaps you're passing a location where you know that there is a development or something, and you are going to at some point have an RT there fairly soon in a known place. You might [do] what we call "stub" the cable. That is, create the splice point for that--for the first sort of segment of that leg at that time so you don't have to disturb the splice. The other situation is as you're building a cable, a fiber cable, particularly in the loop environment, the cables don't come in every random size, [] they come in fairly specific sizes. Predominantly, we use ribbon cable that comes in units of 12. And as you move out from central office, and you pass places where you want to drop off fibers, you dedicate a part of the cable to that location, so let's say--say, as an example, you had a 96 fiber cable, eight ribbons. You come to the first RT on the route, and one of the ribbons is spliced into the route. Now, there isn't any such thing as an 84 fiber cable, so the piece of the 96 fiber cable that goes on to the next RT has a piece of fiber in it, a ribbon, that really has no place to go to be terminated. That piece would be permanently lost. We call it, you will hear about this in the cost case, we call it "breakage" usually. It's kind of a misfit in the building of the cable. Same thing happens in "carpet" cable where the sizes don't perfectly fit. So those pieces would never be intended to be used. They would just be spliced. [Gansert, page 405, lines 1-22 ; page 406, lines 1-15]

Verizon Statements made by VZ-VA witnesses in the VA-Arbitration Hearing held on Thursday, October 4, 2001 before FCC Arbitrator Attwood, Day 3 Hearing Transcripts (Rough).

40. The fact that Verizon's own witness has questioned, under oath, the feasibility of other carriers accessing dark fiber should cast serious doubt on the ILEC Report's breezy claims that dark fiber providers are proliferating and that access is easily or quickly attainable. Equally important, Verizon's witness makes clear that for dark fiber to be useful, it must exist generally as a contiguous strand or ribbon between two accessible, pre-planned cross-connection points where the fiber is terminated. This implies that it is difficult to deploy fiber with a "build it and they will come" attitude, because it may be difficult or impossible for any particular carrier to connect to the available point of access -- that is, the cost of constructing to the "hotel," "manhole," "pull box" or "node" with redundant facilities could be just as expensive (if not more so) than constructing directly to an ILEC central office collocation. And even if construction to the node or hotel is cost-efficient, the buying carrier must still have the necessary confidence that

its investment will not be rendered valueless (and its customers jeopardized) by the financial distress of the supplier and that the using carrier will have on-going and ready access to critical high capacity segment of it transport network. For these reason, if the costs are roughly comparable, the buying carrier will usually build to the ILEC collocation, rather than build to the far riskier third-party wholesaler. Finally, even an otherwise sound supplier will only have limited reach, which means that joint agreements are common. Unfortunately, while these joint agreements can extend fiber providers' reach, the financial difficulty of one partner can jeopardize the interests of others in the facility. Giovannucci/Fea Reply Dec.

B. The ILEC Report Grossly Overstates The Viability And Scope Of Operations Of The Wholesale Local Fiber Suppliers It Identifies.

41. The ILEC Report's Table 5 at page III-12 portrays itself as a catalogue of eleven wholesale suppliers of local dark fiber who apparently the author believes are examples of dark fiber suppliers with credible staying power in the market. The most cursory fact-checking, however, reveals that the ILECs have grossly overstated the extent to which these eleven companies are viable wholesale providers of dark fiber.

42. A closer examination of the ILEC Report's list of wholesale providers demonstrates that the extent of these networks is extremely spotty and limited. Indeed, the companies held out as being the principal wholesale providers suffer from financial woes that prevent them, at the present time, from being considered credible alternative suppliers. My review showed that at least seven of the eleven companies are experiencing severe financial trouble. Indeed, the flagship wholesaler, Metropolitan Fiber Networks (MFN), has declared bankruptcy. As explained above, financial trouble has a serious implication for a carriers' willingness to purchase (and customers' willingness to accept) such capacity as part of it network capacity, especially since dark fiber user must generally be obtained under a long-term

agreement (generally at least 20 years in duration). The remaining four companies all are privately held, making it is difficult to obtain information as to their financial health. Five of the eleven so-called wholesale suppliers are actually dependent on other suppliers, who are themselves in severe financial straits. Even if the supplier itself is currently not in financial distress, the failure of one or more of its "prime" customers could seriously impair the operations of the company. Indeed, two of the companies disclose that they have major customer relationships with carriers that are specifically identified as being in financial trouble. And if this is not sufficiently discrediting, some of the companies on the list either make no representation that they provide dark fiber service in their financial statement or specifically say they are de-emphasizing that line of business.

43. Notably, the four privately held companies provide service in a maximum of ten metropolitan areas. Thus, in order to enter into arrangements with such carriers, a national service provider would have to undertake multi-decade business commitments with multiple carriers. In the current environment, this is simply not an acceptable business risk. *See* Giovannucci/Fea Reply Dec.

44. I have summarized, in the following table, the preceding discussion and the attached material addressing the companies, held out in Table 5 of the ILEC Report (page III-12) to be "Wholesale Local Fiber Suppliers":

Company	Metro Areas Served	Evidence of Financial Difficulty	Reliant on Suppliers in Financial Difficulty	Major Sales to Companies in Financial Difficulty	Holds Self Out As Dark Fiber Supplier in Financial Materials
MFN	15	yes	Probably not	Yipes, Telseon, e.spire, WinStar Cable & Wireless Hyperion	yes
Fiberworks	2	privately held	Unknown	unknown	yes
AFS	5	privately held	Unknown	unknown	yes
FiberTech Networks	7	privately held	Unknown	unknown	yes
Yipes	see MFN	yes	MFN	unknown	no
Telseon	23	probably	MFN, XO, Level 3	unknown	no
Looking Glass	10	privately held	Unknown	unknown	yes
NEON		probably	Level 3	Unknown	de-emphasizing
Progress		loss of $9M in 2001	NEON, Williams Communications	Unknown	yes
EPIK	12	probable	ENRON	360Networks	yes
NEESCom	3	loss in last public disclosure	Unknown	Unknown	yes

C. The ILEC Report Also Overstates The Extent Of Operations Of The Public Utilities Suppliers Of Local Dark Fiber It Identifies.

45. The ILEC Report also contains a Table 6 (*see* ILEC Report at III-13), which purports to list public utilities that provide dark fiber on a wholesale basis. Once again, a closer examination of these companies shows that the ILECs have vastly overstated the extent to which these companies actually provide dark fiber.

46. Table 6 offers no support for the proposition that utilities offer local fiber to any substantial degree. Of the sixteen companies listed, one is repeated from Table 5; seven give no indication on their websites that they even offer carrier services; one reports it has ceased its telecommunications operations; one company is bankrupt; and one, although weathering the most recent financial storm, derives 24 percent of its revenues from one company and does not own its own metro fiber. And of the remaining four, one of those companies expresses a lack of interest in providing dark fiber.

47. These companies may in fact provide some limited metro fiber services, and it would not be surprising if utilities had some success in this area because of their low incremental cost of deploying fiber in existing rights-of-way, using existing structures and construction resources. It does not follow, however, that these utilities represent a viable source of supply for CLECs. These utilities have no obligation to provide supply to CLECs, nor do they have any incentive (or regulatory obligation) to price their services below those of ILEC alternatives, such as special access.

D. The ILEC Report Also Overstates The Extent To Which The IXCs It Identifies Are Suppliers Of Local Dark Fiber.

48. The ILEC Report (Table 7, page III-14) identifies four IXCs that allegedly supply local dark fiber – Williams, Level 3, Global Crossing and Qwest.

49. Two of the four IXCs (Williams and Global) that the ILEC Report identifies as suppliers of metropolitan dark fiber are bankrupt. A third (Level 3) remains in financial distress, and the financial state of the fourth, Qwest, is undergoing significant scrutiny. Thus, while in theory these carriers may have the resources to provide dark fiber, they do not seem to currently offer the financial stability a CLEC seeking investment capital would require to enter into dark fiber agreements, which generally have a 20 year term.

50. Furthermore, there is no evidence that Qwest, the fourth IXC, offers metropolitan dark fiber as opposed to a retail service connecting to Qwest's long-haul network. Indeed, the only documented instances of dark fiber supply are for long-haul applications.

E. COLLOCATION HOTELS

51. The ILEC Report's showing with respect to collocation hotels is also dramatically overstated. The ILECs argue that "CLEC networks also converge today at many other points of high traffic concentration," specifically so-called "collocation hotels." ILEC Report at III-4. The ILEC Report asserts that these "alternative collocation providers" exist in "virtually all major metropolitan areas throughout the country." *Id.* at III-5 & App. G. The ILECs assert that such collocation hotels are significant because "the major competitive fiber-optic providers are all very likely to route their networks to these locations," which they say means that such hotels "effectively provid[e] connection to all points served by all competing networks combined." *Id.* at III-5. According to the ILECs, a CLEC no longer has to grow organically; it can, instead, just locate itself in the right building." *Id.* at III-5.

52. Nothing could be further from the truth. As shown above, there is essentially no viable market for dark fiber, and therefore there are generally no "major competitive fiber-optic providers" available to provide wholesale connectivity to and from these collocation hotels. Moreover, even to the extent there are dark fiber providers, it is rarely practical for a CLEC to use the services of a collocation hotel. As explained in the Giovannucci/Fea Reply Declaration , AT&T uses collocation hotels only on rare occasions. *See* Giovannucci/Fea Reply Dec.

53. In all events, the ILECs' attempts to demonstrate that there are many collocation hotels serving CLECs in all major cities are untenable. For example, the ILEC Report cites four principal examples of collocation hotel providers – Switch & Data, Cable & Wireless (formerly Exodus), Global Switch, and Metro Nexus. *See* ILEC Report at III-4. All available evidence

shows that these companies provide very little collocation to CLECs. Indeed, these companies are increasingly (and sometimes solely) Internet data centers, whose customers are not CLECs but ISPs and other Internet-related companies. That is, they offer retail customers and enhanced service providers points of access to other service providers, generally those with Internet backbone access.

54. Of the four, Switch & Data is probably the only true collocation hotel, in the sense that the ILEC Report uses the term (*i.e.*, as a hotel for CLECs). Switch & Data's website (www.switchanddata.com/frame_index.asp) describes the company as a provider of "carrier-neutral" "collocation facilities" with 30 locations in 29 cities (there are two in New York). The website lists its customers as ISPs, Application Service Providers (ASPs), Storage Service Providers, Content Delivery Networks, and (listed fifth) CLECs. One of Switch and Data's most important telecommunications customers is Williams Communications, but as noted above Williams declared bankruptcy in April 2002. While Switch and Data may have some CLEC customers, it is clearly moving more in the direction of serving ISPs and other similar *non*-CLEC customers. Almost all of the principal deals it has announced this year have involved Internet-related companies, including an agreement with Cogent Communications, a provider of high-speed Internet access (and acquirer of the operations of PSInet); an agreement with Telseon to provide "metro Ethernet connectivity;" and agreements with providers of services that support Internet providers, such as Limelight Networks (content delivery services), amerivault (online backup services), and PAIX.net (an Internet exchange).[19]

[19] *See also* "Switch and Data Focuses on Nashville Market," Nashville Bus. J. (May 3, 2002) (until now a number of its 30 locations had "sat mostly empty," and although Switch and Data is now beginning to focus on these mostly vacant locations, it is looking beyond "the telecommunications providers, which ha[ve] been battered in recent years," and "is focusing on medium-sized companies that are in Web design and hosting, information technology, and applications providers").

55. Exodus (acquired out of bankruptcy by Cable & Wireless) appears to be solely a Web hosting provider. The Exodus website (www.exodus.com/about_exodus/index.html) describes the company as "a world leader in Internet outsourcing, offering enterprises some of the most flexible and secure platforms and services to intelligently scale their Internet operations." It lists its major clients as Yahoo, Sun Microsystems, SportsLine.com, NetFlix, Covisint, and American Airlines – but no CLECs.

56. The third company, Global Switch, has *no* collocation hotels in the United States. As its website makes clear, its eight collocation hotels are all in either Europe or Asia. *See* www.globalswitch.com/global/locations/locations.asp. This may explain why, despite the ILEC Report pointing to Global Switch in the body of the Report (i.e., p. III-4), no Global Switch locations are included in the ILEC Report's list of collocation hotels in Appendix G. In all events, Global Switch appears to be principally another data center that caters to Internet providers; its website describes the company as a "leading provider of large-scale carrier-neutral data centre facilities."

57. The fourth company, Metro Nexus, by its own description "owns and operates a global network of Mission Critical Facilities to house data centers, managed hosting, and disaster recovery space." It owns five properties in the United States (Atlanta, Houston, Jersey City, San Diego, and Seattle). Metro Nexus's website makes clear that most, if not all, of its business is in acting as a data center catering to ISPs and other Internet-related companies. Indeed, in its description of tenant options for collocation, its website states only that customers may "[m]aintain [their] own servers in our conditioned space." *See* www.metronexus.com/index.html.

58. The ILEC Report fares no better in its attempts to catalogue "collocation hotels" in Appendix G of the Report. In that Appendix, the ILEC Report purports to provide an exhaustive list of collocation hotels serving CLECs in the top 50 MSAs. Once again, the most cursory checking reveals that, as noted above, these companies are primarily *not* in the business of providing collocation to CLECs, and indeed, many are in severe financial trouble as well.

59. For example, ECOLO.com is listed for virtually every city on the list (and sometimes as the only collocation hotel provider in a city). ECOLO.com's website (www.e-colo.com), however, indicates that it is actually a broker for other collocation providers, and primarily for data services. It lists its major clients as Bank of America, AOL, First Union, ICG, Dynegy, and Texaco Oil – again, no CLECs are listed.

60. Appendix G also lists COLO.com for a few cities, but COLO.com in fact went bankrupt last year and its assets were acquired by ClearBlue (which also appears on the list in numerous other cities). ClearBlue, however, is primarily a data center and provides Web hosting and other Internet management services. As its website notes (www.clearblue.com), ClearBlue's "facilities provide a secure place for corporations' critical data and equipment, and also enable bandwidth-intensive businesses such as ASPs, ISPs and CLECs to access advanced network and facility resources, deploy distributed networks and deliver content-rich applications and services close to their end users."

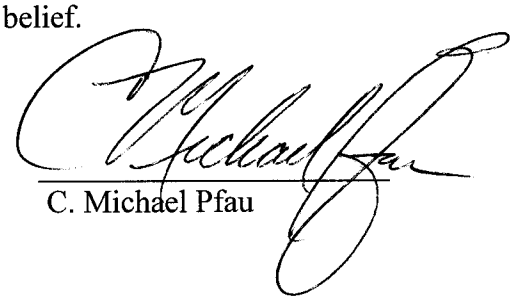
61. Other companies listed in Appendix G are in severe financial distress. For example, Equinix, which is listed for most of the largest MSAs, has seen its share price plummet from $3.50 early this year to less than 50 cents. *See* http://invest.equinix.com/ireye/ir_site.zhtml?ticker=eqix&script=2100 (visited 11:25 AM EDT, July 15, 2002). Similarly, one of Universal Access's major customers, Aleron, declared

bankruptcy this spring, and another major customer has warned of possible bankruptcy. As a result, Universal Access's stock is now trading at for about 15 cents, down from $6 early this year. *See* http://www.nasdaq.com/ (quote for UAXS as of 11:30 AM EDT, July 15, 2002).

62. Thus, the ILEC Report's attempt to demonstrate that alternative transport is accessible by CLECs because collocation hotels exist in abundance hardly proves the point.

VERIFICATION PAGE

I hereby declare under penalty of perjury that the foregoing is true and and accurate to the best of my knowledge and belief.



C. Michael Pfau

July 17, 2002

TAB H

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	**CC Docket No. 01-339,**
Review of the Section 251	)	**No. 96-98 &**
Unbundling	)	**No. 98-147**
Obligations of Incumbent Local	)	
Exchange Carriers	)	
	)	

REPLY DECLARATION OF LARRY A. RUSSELL
ON BEHALF OF AT&T CORP.

I. BACKGROUND

1. My name is Larry A. Russell. My business address is Room E3-2B38, 200 Laurel Avenue, Middletown, New Jersey 07748. I am a Division Manager for Switched Network Evolution in AT&T Laboratories. Switched Network Evolution includes the evaluation of new switching system technology for use in the AT&T local and long distance network.

2. In my current position I am responsible for managing an organization that determines the architectures for future deployment of voice switching capabilities in the AT&T Network. This includes evaluating new technology by analyzing specifications and responses to Requests for Proposals (RFPs) as well as testing in the laboratory. My organization is also responsible for performing cost tradeoff analyses of different technologies as well as evaluating the ability of technology to meet network performance, reliability, and availability objectives.

3. I have been employed by AT&T since 1978 and have held several different assignments in various AT&T technical organizations. I assumed my present position in 1997. For approximately 3 years prior to that I was responsible primarily for managing the R&D

program for enhancing the core AT&T long distance network, covering switching, transport, signaling, and Operation Support System (OSS) technology. Before that I held various systems engineering and development positions in AT&T Network Services and AT&T Bell Laboratories.

4. I hold a Bachelor of Engineering degree from the Georgia Institute of Technology and a Master of Science degree from Stanford University, both in Electrical Engineering. I am a recipient of the AT&T Science and Technology Medal for my work in the evolution of the AT&T switched voice network and a holder of several patents on voice switching technology.

II. SUMMARY AND INTRODUCTION

5. The purpose of my declaration is to rebut claims made by the incumbent local exchange carriers (ILECs) and other commenters that packet-based switches are widely deployed and currently used in a manner that makes it simple for competing carriers to employ them as a substitute for traditional circuit switches and associated networks. According to the ILECs, there is no need for the Commission to require the ILECs to make ILEC local switching available to competitors as a "network element" because, among other things, CLECs can potentially and are in limited circumstances serving voice service customers via the packet switches that have been deployed over the past few years. The ILECs' claims are entirely without merit.

6. Notwithstanding the fact that the ILECs' count of the number of packet switches that CLECs have deployed is, for a variety of reasons, exaggerated,[1] the ILECs point to CLECs' deployment of packet switches and packet-based networks without any regard to how CLECs are in fact using those switches and networks. Such a consideration is critical before any legitimate claim can be made that packet switches can and do directly deliver local voice services, in a manner that reasonably replicates circuit switch functionality. Instead, the ILECs merely attempt to capitalize on industry forecasts and projections that foretell of packet switched networks replacing traditional circuit switched networks someday (*e.g.* the "convergence" of voice and data networks).

7. While this may become a reality at some time in the future, the simple fact is that the end-to-end and ubiquitous convergence of voice and data onto a single public switched (and packet-based) network is not the reality today. The frame relay, ATM, and IP switches of today do not provide voice functionality. Instead, today's network packet switches, to the extent they address local voice telephony at all, complement rather than replace existing circuit switch networks. Packet switches have yet to be designed to provide the full suite of features that consumers and businesses demand from voice services. Carriers therefore can only use packet switches to provide certain functions, and must rely on circuit switches and other equipment to

[1] Although not the focus of my declaration, even a cursory review of the ILEC's identification of so-called CLEC packet switches (*See* "UNE Fact Report 2002" ("ILEC Report") *at* Appendix E) raises significant doubts about the accuracy of the data that is the basis for the ILEC's claims. For example, the ILECs include Signal Transfer Points (STPs) in their counts. STPs, however, perform signaling message routing in a Signaling System 7 ("SS7") network and do not have the ability to provide local switching functionality. Their inclusion is clearly erroneous. Other issues with the ILECs' data relate to the inclusion of packet switches owned by bankrupt CLECs, the inclusion of packet switches that have no equipment type designated to them, and the inclusion of packet switches that have yet to be deployed (e.g., "planned" equipment).

provide the remainder of the functionality, such as the advanced features that are currently available through unbundled local switching functionality.

8. Packet switches can also be used in private networks. However, although they may support private network needs, they must interface with and rely upon the public switched circuit network in order to support the full range of customer calling needs. In particular, private networks generally rely upon the public network to provide backup to insure reliability, as well as to comply with functionality required by law such as Emergency 911 (E911), Communications Assistance for Law Enforcement (CALEA) requirements, and Local Number Portability (LNP). There is such a gap between private network and public network requirements that private network technology should be considered totally irrelevant to the issue of public network packet switching capabilities. To be sure, packet switch technology holds great promise for the future. However, the issue here is whether CLECs can use non-ILEC packet switches *today*, without impairment, as a substitute for access to ILEC unbundled local switching functionality. The answer to that question is an unequivocal no.

III. CLECS' PRIMARY IMPAIRMENT WITH REGARD TO LOCAL SWITCHING IS NOT MITIGATED BY USE OF PACKET SWITCHES

9. As a threshold issue, the ILECs' claims ignore the fundamental fact that the very same issues that inhibit the efficient use of CLEC circuit switches exist regardless of the switching technology the CLEC might employ.[2] This notwithstanding, what the incumbent LECs critically fail to note is that in order for a CLEC to employ a packet switch in lieu of a circuit switch, it would need to convert the POTS traffic to and from a packet format. This in

[2] These issues include practical and economic barriers that do not permit CLECs to utilize their circuit switches to offer local voice services to low volume customer locations and have been fully discussed in AT&T's initial comments. For example, all of the problems associated with "hot cuts" still affect a CLEC's ability to use its switch (whether it be circuit or packet based) to provide service to customers served by voice grade loops.

turn, would require the CLEC to (1) ensure that its customers were all served by "clean" copper, (2) deploy a premises interface "box" that would convert the customer's voice traffic to and from the packet format[3] (and have emergency power back-up), (3) deploy compatible equipment at the network terminus of the copper loop that interoperates with the premises equipment, (4) operate a packet-based transport network that is connected to its serving switch, and (5) possess a gateway functionality that interoperates with other circuit switched networks with which traffic is being exchanged. The likelihood that a single CLEC could cost effectively implement this type of architecture for a broad market is unlikely, at best. And of course all this assumes, incorrectly, that once the customer is connected to the CLEC packet switch network, the switch itself could replicate all the functionality of a local circuit switch.

IV. PACKET SWITCHES DO NOT PROVIDE FUNCTIONALITY EQUIVALENT TO UNBUNDLED LOCAL SWITCHING

10. The ILECs' state that "the two main kinds of packet switches used today are Frame Relay and ATM switches."[4] Critically, the ILECs' counting of packet switches ignores the fact that the majority of ATM and Frame Relay ("FR") switches are typically being used for data transport purposes – *i.e.*, for ATM, FR and IP service provider networks. These packet switches do not in themselves possess the functionality integral to delivering voice services, including among others the (i) initiation of dial tone, (ii) receipt of dialed digits, (iii) recording of call duration and (iv) initiation of ringing, as well as the provisioning of vertical features such as

[3] Unless the carrier deployed an "interface functionality" to convert POTS to a packet format when originating calls (and to convert packets to an analog signal for terminating calls) the customer would need to change out all its traditional telephone sets.

[4] *See* ILEC Report 2002 *at* II-24.

three way calling. Thus, when packet switches are used to provide voice services at all, they are used in conjunction with circuit switches or other equipment that can provide such functionality.[5]

11. There are instances in which ATM and FR services can be used – in conjunction with other equipment – to provide voice services. Critically, however, it is this other box – which is typically either a legacy circuit switch or equipment known as a "softswitch"[6] – that provides the capabilities and call features that support voice services. The ATM and FR switches, on the other hand, merely provide the transport network connecting these adjunct units.

12. In other words, ATM and FR packet switches work *in conjunction with* circuit switches or softswitches – they do not and cannot by themselves *replace* that equipment and provide fully functional voice services on their own. Accordingly, without an understanding as to whether CLECs are deploying softswitches or circuit switches in conjunction with their routers, FR, and/or ATM switches, it is not possible to even begin to analyze whether they can provide the equivalent of their own unbundled local switching functionality.

13. Moreover, even if some CLECs have deployed or may soon deploy softswitches in conjunction with ATM or FR packet switches, that fact alone would not enable the CLEC to

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[5] Indeed, the ILEC's also attempt to portray Cable IP Telephony offers, such as AT&T Broadband's IP Telephony offer, as an alternative to circuit switches. Such a reference is erroneous as such offers typically utilize circuit switches in order to provision local voice services to end-users. The packet-based facility in AT&T Broadband's implementation is ultimately terminated on a line side gateway with a GR-303 interface to the circuit switch. The gateway performs the appropriate conversions necessary to interface with a circuit switch network. If this did not occur, and in most case it occurs in close proximity to the cable head end, the cable telephony subscriber would not be able to send calls to or receive calls from a circuit switched network.

[6] Decentralized "softswitch" or call agent architectures by vendors such as Siemens and Sonus typically separate the "service logic," or call control, from the bearer switching layer. Softswitches are used to provide the call control, routing, and signaling intelligence of a traditional telephone switch via open commercial hardware. Thus softswitches allow circuit-based hardware to be replaced with packet-based switching equipment.

compete fully against the ILECs' traditional circuit switched voice offerings. Softswitches do not offer nearly the range of features and functions that are currently supported over traditional Class 5, circuit switched networks. These features and functions were developed for the circuit switched network over the course of a long period of time – nearly 30 years -- but softswitch technology is very new. Accordingly, most currently available softswitches have been engineered to provide about 15 to 30 of the most common features – a small proportion of what a traditional circuit switch can deliver. Indeed, many softswitches are incapable of supporting functionality required by law (e.g., E911 and CALEA) and/or functionality essential to interoperation with common loop plant architectures (e.g., GR-303 requirements/specifications).[7]

14. Thus, the ILECs' claim "that packet switches substitute for [ILEC] circuit switches to the extent that traffic can be routed directly to a packet switch, without first being routed through [the ILEC's] circuit switch", ILEC Report *at* II-20, is at best misleading. While it may be possible to avoid the ILEC circuit switch early in the call processing sequence for originating calling, it is unlikely that the call could avoid the circuit switched network in general and more specifically the incumbent LEC network, particularly for purposes of call termination and network transiting. Thus, a mere count of packet switches does not prove that even one CLEC packet switch provides functionality equivalent to the incumbent LECs' unbundled local switching functionality.

15. Moreover, as virtually all customer equipment is circuit based, and because most CLEC calls must be handed off to an ILEC circuit switch, the cost of conversion from circuit to packet and back to circuit again makes the cost of soft switching-based solutions prohibitive even if they have all the required functionality. Of particular note, because of the delay inherent

[7] GR-303 refers to a communications protocol used extensively in telecommunications equipment such as DLCs and circuit switches.

in packet switching, echo cancellation is required on every call, in contrast to local circuit switching in which echo cancellation is generally not required, which puts packet switching at a significant disadvantage in the local network over circuit switching from a cost perspective.

V. PRESENCE OF PACKET SWITCHES IN IXC AND/OR PRIVATE NETWORKS IS IRRELEVANT TO UNDERSTANDING LOCAL SWITCHING IMPAIRMENT

16. The ILECs also state that interexchange carriers such as AT&T typically provide Frame Relay (FR) service, ILEC Report *at* II-24, and they observe that "[l]ong-distance carriers have been migrating their traffic to high-speed packet switches for several years." *Id.* at II-20. The deployment of packet technology in IXCs' core networks provides IXCs with efficiencies in their use of *long distance transport* facilities. Critically, however, their use of such technology provides them with *no* local switching functionality. Such references are misleading, at best, as no conclusion regarding providing functionality equivalent to the ILEC's unbundled local switching can be drawn from material about plans for long distance networks.

17. Indeed, the ILECs themselves have started to use packet switches for transport. For example, Verizon recently announced the introduction of "packet switching to transmit voice phone calls" in several switching centers throughout New Jersey and Florida—it refers to this architecture as "Voice Trunking over ATM" (VToA).[8] Verizon will be utilizing these packet switches in order to achieve greater efficiencies in transport throughout its network—not necessarily as an outright replacement of their circuit switches. Notably, Verizon states that VToA technology "offers the *potential* for a cost-effective way to migrate to a Voice over IP

[8] See Verizon news release titled "Verizon Introduces Transmission Over Packet Switching Provided by Nortel Networks" dated July, 2, 2002, available at http://newscenter.verizon.com/proactive/newsroom/release.vtml?id=77310&PROACTIVE_ID=cecfc9c6c9cacfc9c7c5cecfcfcfc5cecfc7c7c8c6cccfcacfc5cf

platform, *if* the market and future technology justify that move *at some time in the future.*"[9] Thus, it seems evident that at least Verizon, recognizes that packet switches are at present complementary rather than substitutes for existing circuit switched architectures.

18. Lastly, while use of packet switching in private networks may indicate that the technology could ultimately displace circuit switch technology, it proves nothing about a CLEC's ability to use packet switching in lieu of unbundled local switching technology today. Private networks generally rely upon the public network to provide backup to insure reliability, as well as compliance to E911, CALEA, LNP, and other legal/regulatory requirements. Deployment of voice over packet switching in a public data network raises quality of service issues that are much more complex than deployment of such switching in a private or closed network. Some of these issues include packet size, packet delay, packet delay variation, packet loss, packet reordering, and echo control that have the potential to materially affect end-to-end voice service quality.

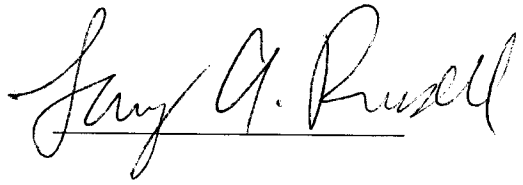
VI. CONCLUSION.

19. For all these reasons, a mere count of the number of deployed packet switches provides no basis for concluding that CLECs have access to unbundled local switching functionality, either through their own deployment of packet switches or through the use of packet switches deployed by others.

[9] *Id.* (emphasis added).

VERIFICATION PAGE

I hereby declare under penalty of perjury that the foregoing is true and accurate to the best of my knowledge and belief.



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